Clear-Com®
COMMUNICATION SYSTEMS

WBS-670/680 Wireless Intercom Systems

Raising Performance

Frequency-agile UHF wireless intercom systems

Whether you are adding to a wired intercom system or creating a stand-alone wireless communications system, the WBS-670 and WBS-680 wireless intercoms are excellent choices. Clear-Com's UHF Synthesized Wireless Intercom Systems combine frequency agility and powerful features to maintain the audio clarity and reliability that a wired system provides. These systems extend the reach of your communications system in live performance, studio and mobile television production, industrial and aerospace applications, or wherever full-duplex wireless communications are required.

Frequency-agile UHF Operation
The WBS-670 and WBS-680 operate in select frequency bands between 470-686 MHz; both wireless systems are supplied with 24 factory-selected, intermodulation-free frequencies. Select from factory presets or any suitable frequency in 25 KHz increments. 720 Tx and 720 Rx frequencies can be selected; each from independent 18 MHz operational bands.

Adjustable Transmitter Power
The beltpacks can sense when operating in close proximity to the base station and intelligently reduce transmitter output by 10 dB. This effectively eliminates overloading the base station receiver front end which is the primary cause of "near-far" densing problems. WBS wireless system beltpacks operate in normal power mode for typical distances; a manual high-power setting is available when operating the equipment more than 200 ft (160 m) for the base station.

Pre-Selected Compatible Frequencies and Frequency Scan
System setup is easy with the 24 internal pre-selected and intermodulation-free frequency groups. Aided by the "ClearScan" function, base stations and beltpacks can typically be coordinated and working together within minutes. Memory locations can be allocated so that particular sets of frequencies can be chosen, programmed and saved as a new preset.

Graphical User Interface
A clear, backlit LCD screen displays the status of the beltpacks and provides easy access to all the powerful features as well as configuration of the operational parameters. The LCD displays which beltpack is transmitting, operating frequencies, and group/channel status.

Superior Audio Quality and Range
The audio quality of the WBS-670 and WBS-680 wireless systems is on par with that of professional wired party-line and digital matrix intercoms. UHF frequencies are ideally suited for operating through obstacles; a variety of remote antenna options can help improve range in difficult, interference-prone production environments.

Seamless Connection to Wired Intercoms
WBS wireless systems can interface with a variety of 2-wire party-line or 4-wire digital matrix systems. In addition to interfacing with external intercom systems, the systems provide connections for auxiliary balanced audio input and output. Wireless Talk-Around (WTA) and Stage Announce (SA) features are available on WTR-680 and WTR-682 beltpacks.

Rechargeable Battery Option
The battery pack will operate the beltpack in full-duplex mode for 14 hours with a set of alkaline batteries. The optional rechargeable NiMH (nickel metal hydride) batteries will give over 11 hours of continual use. Chargers are available in single-bay or 4-bay configurations.

WBS-670 Single-Channel Wireless

The WBS-670 1RU, rack-mountable base station supports up to four full-duplex wireless beltpack. The base station features a full talk/listen headset so an additional person could communicate with the intercom channel while at the base. Rear panel connections allow multiple base station/beltpack systems to operate as one large system. The WTR-670 beltpacks are constructed of extremely light, durable cast magnesium. The detachable antennas are secured to the beltpack via threaded post connectors and thus will not break or damage easily. The beltpacks feature a low-profile volume control and a robust, distinguishable momentary latch talk button.

The LCD screen displays which beltpacks are transmitting the operating frequencies and group/channel status. In addition, the front panel provides controls to adjust the input and output levels of both the connected wired intercom and auxiliary audio connection. The rear panel offers a 3-pin XLR loop-through connectors for one channel of wired party-line intercom, an RJ-45 connector for direct connection to a digital 4-wire intercom port, and a pair of auxiliary connectors. The base station is supplied with a pair of efficient, half-wave co-linear antennas; connected to the rear panel transmit and receive receptacles via TNC male connectors. A variety of external antennas may also be used.

WBS-680 Two-Channel Wireless

Like the WBS-670, the WBS-680 is a 1RU, rack-mountable base station that supports up to four full-dublex wireless beltpacks and provides a full talk/listen headset station. Rear panel connections allow the WBS-680 base station to connect to two separate channels of wired intercom; 2-wire, 4-wire or both. The WTR-680 beltpack provides a toggle switch enabling the user to communicate with either intercom channel A or B (including any wired intercoms connected at the base station.

The WTR-680 and WTR-682 beltpacks offer advanced features such as the Wireless-Talk-Around (WTA) and Stage Announce (SA) which provide added flexibility and expands the control of the mobile user.

The WTA button momentarily routes audio to only the wireless beltpacks monitoring the current channel. This effectively isolates communications to the wireless beltpacks on that channel; this isolation (ISO) channel is useful in complex productions where WTA is often used as a third channel. The Stage Announce (SA) button allows a (dry) relay signal to be fired from the Stage Announce output on the back of the base station. This relay can activate a loudspeaker, two-way radio, IFB or any other relay activated device.

The WTR-682 is the most versatile beltpack as it provides two separate volume controls and two separate channel select buttons (A and B). The WTR-682 allows the user to simultaneously talk/listen to both channels while maintaining the ability to control the level of each individual channel.

WBS-670/680 Specifications

Overview

	WBS-680/WBS-670 Base Station	WTR-680/WTR-682/WTR-670 Beltpacks
RF Frequency Range	518-608 MHz, 614-686 MHz in 18 MHz TX and RX bands WBS-670: G9 band, 796-814 MHz Tx, Germany only	518 - 608 MHz, 614 - 686 MHz in 18 MHz TX and RX bands WTR-670: G9 band, 844-862 MHz Tx, Germany only
Power Requirement	100-240 VAC, 50-60 Hz, IEC receptacle	6 Alkaline "AA" Cells (NiMH optional)
Typical Battery Life Alkaline	N/A	14 Hours (Continuous duty with talk light on)
Typical Battery Life - Nickel Metal Hydride (1500 mAh)	N/A	11 Hours (Continuous duty with talk light on)
Current Draw	N/A	140 mA (Push-to-Talk, Talk On)
Temperature Range	-4°F to 140°F (20°C to 55°C)	-4°F to 140°F (20°C to 55°C)
Dimensions	19.0" W x 1.72" H x 14.0" D (48.3 cm x 4.4 cm x 35.6 cm)	3.75" W x 5.05" H x 1.65" D (9.5 cm x 12.8 cm x 4.2 cm)
Weight	WBS-680: 7 lbs. 2 oz. (3.24 kg) WBS-670: 6 lbs. 15 oz. (3.15 kg)	16 oz. (0.454 kg) with batteries 15 oz. (0.425 kg) with batteries
Transmit Antenna	1/2 Wave (supplied), TNC Male Connector	1/4 Wave (supplied), Screw type
Receiver Antenna	1/2 Wave (supplied), TNC Male Connector	1/4 Wave (supplied), Screw type
FCC ID	B5DM514	B5DM515
Frequency Response	300 Hz - 8,000 Hz	300 Hz - 8,000 Hz
Four-Wire Input	Level Adjustable (2 Vrms typical)	N/A
Four-Wire Output	Level Adjustable (2 Vrms typical)	N/A
Clear-Com® Party-line Levels	Input/Output Level Adjustable (1 Vrms typical), Line Impedance 200 W	N/A
RTS® Party-line Levels	Input/Output Level Adjustable (0.775 Vrms typical), Line Impedance 200 W	N/A
Telex® Party-line Levels	Input/Output Level Adjustable (1 Vrms typical), Line Impedance 300 W	N/A
Auxiliary Input	Adjustable (2 Vrms typical)	N/A
Auliliary Output	Adjustable (2 Vrms typical into 600 W) (at rated deviation)	N/A
Stage Announce Output (WBS-680 only)	Internally Adjustable (1Vrms typical at rated deviation into 100K W)	N/A
Stage Announce Relay (WBS-680 only)	Dry contact, rated at 1Amp, 24 V Max. / N/A	N/A

Transmitter

	WBS-680/WBS-670 Base Station	WTR-680/WTR-682/WTR-670 Beltpacks
Type	Synthesized, 720 channels	Synthesized, 720 channels
Transmit Power	WBS-680: 100 mW max. (High), 10 mW (normal) WBS-670: 50 mW max. (High), 5 mW (normal)	WTR-680/WTR-670: 50 mW max. (auto-power reduction when close to base)
RF Frequency Stability	0.005%	0.005%
Modulation	FM, 40 KHz Deviation	FM, 40 KHz Deviation
Modulation Limiter	Peak-Responding Compressor	Peak-Responding Compressor
Modulation Frequency Range	300 Hz -8,000 Hz +-2 dB	300 Hz -8,000 Hz +-2 dB
Microphone Audio Input	30 W - 3,500 W	30 W - 3,500 W
Microphone Input Sensitivity	9 mV	9 mV
Radiated Harmonics & Spurious	Exceeds FCC specifications	Exceeds FCC specifications
FCC Acceptance	Type accepted under FCC Part 74	Type accepted under FCC Part 74

Receiver

	WBS-680/WBS-670 Base Station	WTR-680/WTR-682/WTR-670 Beltpacks
Type	Dual Conversion Superheterodyne, Synthesized, FM, 720 channels	Dual Conversion Superheterodyne, Synthesized, FM, 720 channels
RF Sensitivity	<0.7 mV for 12 dB SINAD	<0.7 mV for 12 dB SINAD
Signal-to-Noise Ratio	95 dB	95 dB
IF Selectivity	3 dB at 230 KHz	3 dB at 230 KHz
Image Rejection	70 dB or better	70 dB or better
Squelch Quieting	95 dB	95 dB
RF Frequency Stability	0.005%	0.005%
Distortion	<1% at full deviation	<1% at full deviation
Local Headset Output	40mW output into 600 W (1% distortion)	40mW output into 600 W (1% distortion)
FCC Acceptance	Notification under FCC Part 15	Notification under FCC Part 15

WTR1C

The WTR1C is a single battery charger that provides built-in maintenance capability to maximize the battery cycle life for the WBS-670 and WBS-680 wireless intercom systems. It helps to optimize the battery and maintains the battery's peak capacity while it is charging. There is no restriction to how long the battery can remain in the charger. Rapid Charge capabilities fully charge batteries in less than 2 hours.

WTR4C

The WTR4C has the same features as the WTR1C, except that the WTR4C can charge up to 4 battieries simultaneously.

Status Indicators:

- Charging LED - Solid light indicates battery pack is charging
- Ready LED - Solid light indicates battery is fully charged
- Rejected LED - Flashing light indicates faulty or dead battery
- Power LED - Solid light indicates there is power to the charging slot
- Conditioning Cycle LED - Flashing light indicates discharging process

Features:

- Easy-to-read LED status indicator lights
- Battery is fully charged in less than 2 hours
- Maintains battery at peak capacity
- Optimizes battery life
- Battery can remain in charger indefinately

BC-800NM4 & BC-800NM Battery Chargers

Physical Characteristics	BC-800NM4	BC-800NM
Product Dimensions	13" (33cm) W x 1.7" (4.5cm) H x 7" (17.8cm) D	3" (7.62cm) W x 3.5" (8.89cm) H x 6" (15.24cm) D
Product Weight	4lbs (1.5kg) without battery adapters	1lb, 6oz (0.62kg)
Shipping Dimensions	11.5" (29.2cm) W x 10.5" (26.7cm) H x 18.5" (47cm) D	7" (17.8cm) W x 4.5" (11.43cm) H x 7" (17.8cm) D
Shipping Weight	10lbs, 9oz (4.8kg) with battery adapters, power supply, & rechargeable battery packs	2lbs, 10oz (1.2kg) with rechargeable battery pack & power supply
Material	ABS KJW fire retardant plastic, textured	ABS KJW fire retardant plastic, textured

Features	
Conditioning Cycle	Provides built-in maintenance capability to maximize battery cycle life
Status Indicators	'Charging', 'Ready', 'Rejected' (dead battery), 'Conditioning Cycle' and 'Power LED' indicators make the BC-800NM simple and easy to use
Intelligent Charging	• Optimizes the battery • Battery can remain in the charger indefinitely • Maintains battery at peak capacity
Rapid Charge Capability	Charges in less than 2 hours

User Environment	
ESD	8KV continuous contact discharge; 15KV from air to all surfaces without contact
Humidity	95% relative humidity (non-condensing)
Drop	Unit functions normally after 4ft./1.2m drop to concrete
Storage Temperature	-40° to 122°F/-40° to 50°C
Operating Temperature	32° to 122 F/0° to 50°C
Power Supply	BC-800NM4: (Universal): 90V-230VAC, 50/60 Hz Output: 15 VDC, 5A or 24 VDC, 4.5A BC-800NM: (Universal): 90V-230VAC, 50/60 Hz Output: 15 VDC, 1.5A or 24 VDC, 1.3A
Safety Standards	Charger & power supply UL listed (UL 1950), CSA Certified (C 22.2 No. 223); Compliant to FCC part 15 Class A and CE Marking (Electromagnetic Compatibility) Directive 89/336/EEC and Low Voltage Directive 73/23/EEC; C15PR-22 Class B

Performance Characteristics	
Rapid Charge	Charges batteries to 90+% capacity in 2 hours or less
Complete Charge	Completes 100% capacity charge in 4 hours or less
Conditioning	Completely discharges a battery and automatically switches to charging mode
Maintenance Charge	Maintains the battery at optimum capacity indefinitely

User Interface	
Power LED	Indicates POWER to charging slot
Conditioning/Charging LED	Flashing indicates discharging process
Reject LED	Flashing indicates faulty battery
Conditioning/Charging LED	Solid indicates battery pack is being charged
Ready LED	Solid indicates battery charged

WBS-670/680 UHF Frequency Band Chart

NTSC TV CHANNEL	Start Frequency	End Frequency	Frequency Band Options
14	470	476	88
15	476	482	
16	482	488	
17	488	494	
18	494	500	
19	500	506	
20	506	512	
21	512	518	
22	518	524	A
23	524	530	
24	530	536	
25	536	542	B
26	542	548	
27	548	554	
28	554	560	C
29	560	566	
30	566	572	
31	572	578	
32	578	584	
33	584	590	
34	590	596	E
35	596	602	
36	602	608	
37	608	614	NOT USED IN USA
38	614	620	
39	620	626	
40	626	632	
41	632	638	2
42	638	644	
43	644	650	
44	650	656	3
45	656	662	
46	662	668	
47	668	674	4
48	674	680	
49	680	686	
53	704	710	6
54	710	716	
55	716	722	

C6 not available in parts of N. America

796	802	G
802	808	
808	814	

844	850	9
850	856	
856	862	

G9 Frequency Band is not authorized for use in the USA or Canada

PAL TV CHANNEL	
21	470-478
22	478-486
23	486-494
24	494-502
25	502-510
26	510-518
27	518-526
28	526-534
29	534-542
30	542-550
31	550-558
32	558-566
33	566-574
34	574-582
35	582-590
36	590-598
37	598-606
38	606-614
39	614-622
40	622-630
41	630-638
42	638-646
43	646-654
44	654-662
45	662-670
46	670-678
47	678-686
48	686-694
49	694-702
50	702-710
51	710-718
52	718-726
53	726-734
54	734-742
55	742-750
61	790-798
62	798-806
63	806-814
64	814-822
65	822-830
66	830-838
67	838-846
68	846-854
69	854-862

Transmitt Bands

Receive Bands

Single Channel Wireless Intercom System (WBS-670) Frequency Band Options: A2, B4, C3, C6, G9

Two-Channel Wireless Intercom System (WBS-680) Frequency Band Options: A2, B4, C3, C6, E88

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